

SCIENCE.

COAL IN POLAND.—Boring along the lines of rail-way in Poland have led to the discovery of five seams of coal. The last was found at Bamburz.

NEW DYES.—Messrs. Girard and De Laine have obtained a patent in France for extracting three new dyes from the black resinoid formerly thrown away in the manufacture of rosaniline.

TO DETECT FREE ALKALI IN SOAP.—If the soap contains rosin, it will not add neutral salts to the alkali necessary to a solution of the soap. To a solution of the soap containing no rosin, calomel or corrosive sublimate may be added, which results in the formation of the black sub-oxyde of mercury.

TANNING.—The report of the Commissioners having charge of the Manufacture of the Paris Exposition, have come in, and it is concluded which will meet the approval of practical chemists regarding the various processes for rapid tanning, namely: That no definite advantage has yet been found in the use of chrome, and the period required remains as the same as before.

SUGAR IN MUSCLE.—Dr. Banke of Munich, has by recent experiments confirmed the discovery made by Michelser, that a true, fermentable sugar exists in muscle, which is increased by motion, (tension), and that the tone caused by it is effective in causing this increase, for the sugar is proved to arise in the muscle itself, and not from muscular substance.

NICOTINE.—Mr. Melissen, a Belgian chemist, finds the proportion of nicotine in tobacco varies greatly in different countries. That grown in France contains nearly eight per cent, while that from Havana only two per cent of nicotine is found. He advises smoking in the cigar against the cold, and smoking in place of in the pipe, as the heat of cotton impregnated with tannin and citric acids, which will arrest the alkaloid and form tannate and citrate nicotine.

WELDING IRON.—M. Lietart of Brussels has described a new method of welding iron, steel, or brass, with an arc. By calcining the iron to a fine powder, 1/1000 part of zinc or steel filings, 100 grammes of sal ammoniac, 10 grammes of borax, and 50 grammes of balsam of Copra. One of the pieces of iron to be welded is soiled with this mixture, after being cleaned with a brush, the powder is spread upon it, and the other piece of metal, at a white heat, is brought in contact with it; thus a perfect welding is effected.

A GREAT BALLOON.—At the Paris Exposition a balloon in its form of a sphere, 100 feet in diameter, and 200 feet high, is raised by a cable and makes hourly trips upward, in the same manner as worked in a model at the last exhibition by the American Institute, and as operated on a large scale at the Crystal Palace. The basket contains hydrogen, the most buoyant of the gases, which will be made by decomposing steam by means of red hot charcoal. By this process, if steam hydrogen gas can be furnished at about \$2.70 per cubic foot.

A MINIATURE VOLCANO.—Prof. Chouteau, filling the crater of a natural Volcano at Nancy, France, has devised the following experiment showing the power of Stohmbo's induction coil. A quantity of the powder of sulphur is mixed with a small proportion of zinc, and with it is introduced into a hydrogen, in which it is quite an impulsive state; zinc and copper filings may also be added in small quantities. The mixture, made as compact as possible, is placed on a piece of gauze, which is then much longer than broad. The ends of the wires of a Ruhmkorff apparatus are inserted into the heap, so as to be two or three centimeters distant from each other. When ready, a current of electricity is passed through the wires, and a violent explosion takes place! A sort of crater is formed, whence magnificent sheets of fire are seen to issue, displaying colors like a bouquet of fireworks. It is really a volcano, on a very small scale, having its subterranean noises as it were, and spouting living lava.

New Publications.

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